2.0 BACKGROUND

2.1 HISTORY OF THE SITE

In the late 1940s, North American Aviation acquired land in the Simi Hills between the Simi and San Fernando Valleys. That land, now known as the SSFL, was used primarily for the testing of rocket engines. Atomics International, a division of North American Aviation, was formed in 1955, and part of Area IV was set aside and used for nuclear reactor development and testing. In 1984, Rocketdyne merged with Atomics International. The Boeing Company purchased Rocketdyne in 1996.

Activities in Area IV started in the mid-1950s; until 1964, these activities were primarily related to sodium-cooled nuclear power plant development and development of space power systems with sodium and potassium as coolants. ETEC (originally known as the Liquid Metal Engineering Center) was formed in the mid-1960s as an Atomic Energy Commission (now DOE) laboratory for the development of liquid metal heat transfer systems in support of the Liquid Metal Fast Breeder Reactor Program. Nuclear operations at ETEC included 10 nuclear research reactors, 7 critical facilities, the Hot Laboratory, the Nuclear Materials Development Facility, the Radioactive Materials Handling Facility (RMHF), and various test and nuclear material storage areas. As a result of DOE nuclear activities, several ETEC facilities became radioactively activated and/or contaminated.

All nuclear operations ended in 1988. Since that time, DOE-funded activities have focused on decontamination and decommissioning of the ETEC facilities and offsite disposal of waste. Remediation of ETEC is now in its final stages. Three facilities still contain residual radiological contamination and/or activation.

Activation

Neutrons are electrically neutral subatomic particles. In a nuclear reactor, neutrons from uranium (contained in cylindrical fuel pellets and placed in fuel assemblies) strike other uranium atoms, causing them to split into parts. This produces heat, radioactive fission products, gamma rays, and more free neutrons. The neutrons produced by the fission process sustain the nuclear reaction by striking other uranium atoms in the fuel, causing additional atoms to split. During nuclear reactor operations, some neutrons generated by the fission process leave the reactor core. These neutrons enter the concrete shielding surrounding the reactor. This interaction causes some elements in the concrete to gain neutrons and become radioactive themselves. At two ETEC facilities (Buildings 4059 and 4024), the shielding concrete contains low levels of activation products as a result of the nuclear operations that were conducted in those buildings in the past. The activation products produced in shielding and structural materials (*e.g.*, rebar) are tritium, iron-55, nickel-63, cobalt-60, and europium-152/154.

DOE also conducted large-scale heat transfer and fluid mechanics experiments, using nonradioactive sodium metal in a molten state at ETEC. While not a contaminant, sodium metal is the most significant hazardous chemical substance remaining at ETEC. Most of the sodium has been removed and shipped offsite for reuse at other industrial sites. Residual sodium remains at one facility.

Hazardous materials such as asbestos insulation and lead-based paint were also used in ETEC facilities.

In addition to DOE-sponsored activities in Area IV, the balance of the SSFL has been used by Boeing, the National Aeronautics and Space Administration (NASA), and the Department of Defense for rocket and laser testing, which have also resulted in hazardous chemical contamination. DOE is responsible only for contamination resulting from DOE-sponsored activities. Contamination on other portions of the SSFL is the responsibility of other federal agencies and private entities.

2.2 REGULATORY FRAMEWORK

Under the authority of the Atomic Energy Act (42 U.S.C. 2011 *et seq*.), DOE is responsible for establishing a comprehensive health, safety, and environmental program for managing its facilities through the promulgation of regulations and the issuance of DOE orders. DOE derives this authority from Section 161 of the Act (42 U.S.C. 2201). In general, DOE orders set forth policies, programs, and procedures for implementing policies. In addition, DOE policy is to conduct all its cleanup in a manner consistent with CERCLA.

2.2.1 Radiological Contamination

Decontamination activities are governed by DOE Order 5400.5, *Radiation Protection of the Public and the Environment* (DOE 1990). Chapters 2 and 4 of this order prescribe an extensive and detailed methodology for restoring DOE sites. DOE Order 435.1, *Radioactive Waste Managemen*t (DOE 1999), is also applicable to the management of waste generated during cleanup of the radiological facilities. It is also DOE policy to conduct decommissioning consistent with the CERCLA non-time critical removal process. Pursuant to the order and policy, DOE has prepared and issued the *ETEC Closure Program – DOE Order 435.1 Implementation Plan* (Boeing 2000a).

To verify that cleanup policies and standards are being followed, DOE has contracted with the Oak Ridge Institute for Science and Education (ORISE) to conduct and document surveys at ETEC facilities to verify cleanup activities have met their objectives for DOE independently of Rocketdyne, DOE's cleanup contractor. ORISE has established an Environmental Survey and Site Assessment Program that conducts radiological surveys and environmental assessments for government agencies such as DOE and NRC that are working to clean up facilities contaminated with hazardous or radioactive materials. The Institute verifies that the sites are free of any contamination that may be harmful to the public or the environment by using a combination of laboratory and field capabilities to control all aspects and phases of the survey process. Institute staff follow systematic procedures to collect samples for analyses in their laboratory. Should these analyses indicate that contaminants remain above acceptable levels, the Institute recommends actions to be taken. Although the ORISE has a contractual relationship with DOE, it is not under the control or influence of Rocketdyne, the DOE contractor responsible for site restoration.

As an Agreement State under the provisions of the Atomic Energy Act, the State of California also has jurisdiction over non-DOE radiological activities at ETEC. The California Department of Health Services (DHS) oversees the radioactive materials license held by Rocketdyne, radioactive facility cleanup, and environmental monitoring. DHS also conducts unannounced inspections to verify the amounts and types of radioactive materials being used onsite, evaluates radiation exposure to employees and the general public, and reviews records related to radiation usage at the site. In particular, before a former DOE radiological facility at ETEC may be released for unrestricted (non-DOE) use in accordance with state regulatory standards, DHS must concur with the DOE determination regarding the decontamination and decommissioning of the facility.

The release process is implemented to ensure that the facility will not expose future users to hazards or risks from radiation. DOE Order 5400.5 (DOE 1990) requires DOE contractors to obtain approval of the cleanup standards that will be implemented during decontamination and decommissioning activities. These cleanup standards address surface contamination limits for building surfaces, soil radio isotope concentrations, and groundwater.

Rocketdyne submitted its proposed criteria to DOE and the DHS, which approved them in 1996 (Rocketdyne 1999a). The following steps occur in the cleanup process for a particular radiation facility or facilities at ETEC:

- Characterization survey to determine the extent and type of contamination.
- Evaluation of options for decontaminating the facility and managing any generated waste.
- Decommissioning plan to describe the technical requirements, schedule, resources, and goal of the cleanup.
- Decommissioning and decontamination, during which all contamination is removed from the facility. Activities include removing fuel and equipment, cleaning contaminated surfaces, removing material with volumetric neutron activation, removing tanks, and removing contaminated soil.
- Remedial action support surveys to determine if a cleanup action has been effective and whether additional remedial action is needed to meet cleanup goals.
- Radioactive waste disposal in DOE-approved or NRC-licensed disposal sites.
- Final decontamination and decommissioning report to document the process, costs, waste volumes generated, and worker exposure incurred.
- Final radiological status survey to ensure than all contamination has been removed to below limits specified in federal and state regulations. Guidance for performing such surveys is provided in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) (NRC/EPA 1997). For ETEC facilities, the survey is conducted by Rocketdyne and the results are sent to DOE and the DHS Radiologic Health Branch.
- Independent verification surveys performed by a third party to verify the results of the final status survey. For ETEC facilities, DOE contracts with ORISE to provide the independent verification surveys. The results of the independent survey are forwarded to the DHS, which is asked to either release the facility for unrestricted use (for Rocketdyne-owned buildings) or to concur with the release for unrestricted use (for DOE-owned buildings).
- Certification docket, which includes all key documentation (approved site release criteria, approval of the criteria, the independent verification survey, and the release concurrence letter from the DHS).
- Federal Register notification of intent to release a DOE-owned building for unrestricted use or Radioactive Materials License amendment, issued by the DHS, to remove a Rocketdyne-owned facility from the license.

In sum, the legal and regulatory process of releasing a building for unrestricted use ensures that (1) approved cleanup standards have been met, (2) no further radiological controls or regulatory oversight are imposed on the building or land, (3) the building can safely be used for any other purposes without any further radiological controls, (4) the building can be safely demolished and disposed of at sanitary landfills without any further radiological controls, and (5) any other material from the building can be safely reused or recycled without any further radiological controls.

2.2.2 Chemical Contamination

Cleanup of chemical contamination at ETEC is being regulated under the RCRA (42 U.S.C. 6901 *et seq.*). As part of Area IV of the SSFL, ETEC is subject to several ongoing RCRA actions: closure of inactive RCRA treatment, storage, or disposal units; compliance/permitting of active RCRA units; groundwater characterization and remediation; and RCRA corrective actions. These activities are under the jurisdiction of the California Environmental Protection Agency's Department of Toxic Substances Control, pursuant to delegated authority from the EPA. The Department of Toxic Substances Control is preparing an environmental impact report, in accordance with the California Environmental Quality Act, for the corrective measures to be undertaken under the RCRA Corrective Action Program for all of the SSFL, including ETEC. The environmental impact report will be based in part on information generated from the characterization of chemical releases at SSFL performed in the RCRA corrective action process.

Because the cleanup of the chemical contamination at ETEC is being undertaken in the larger context of the SSFL cleanup and under a separate regulatory process, these activities are not part of the proposed action or alternatives analyzed in this EA. DOE has analyzed the cumulative impacts of the cleanup of the ETEC facilities for which DOE is responsible and the ongoing RCRA cleanup at the SSFL (*see* Section 4.14).

Compliance with RCRA

RCRA establishes a comprehensive regulatory program for the management of hazardous waste and the cleanup of active sites where releases have occurred. RCRA requires that hazardous wastes be treated, stored, and disposed of so as to minimize present and future threats to human health and the environment. RCRA applies mainly to active facilities that generate and manage hazardous wastes.

DOE facilities that store, treat, or dispose of hazardous waste or waste containing hazardous constituents are subject to RCRA requirements and must obtain a permit from EPA or from states that have been delegated permit authority by EPA. The Federal Facilities Compliance Act, 42 U.S.C 6961, waives DOE's sovereign immunity by allowing states to impose fines and penalties for RCRA violations.

RCRA compliance programs include the following activities: permitting storage, treatment, and disposal facilities; closing inactive RCRA-permitted facilities; and undertaking corrective actions to address chemical contamination at active sites. Developing corrective actions involves the preparation of a RCRA facility assessment, facility investigation, corrective measures study, and corrective measures implementation. Facility assessments are used to identify solid waste management units (defined as any location where hazardous materials were used, stored, or handled) and areas of concern.

In 1989, a RCRA facility assessment identified solid waste management units and areas of concern at the SSFL. The SSFL corrective action process is currently at the RCRA facility investigation stage.

2.2.3 Oversight Activities

Other federal, state, and local agencies are also involved in various oversight activities at ETEC and the SSFL:

- ***EPA's Office of Radiation and Indoor Air*** is the lead agency responsible for enforcing those provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) related to radionuclides. Although nuclear operations are no longer conducted at ETEC, these standards

also apply to ongoing decontamination activities that might produce air emissions. DOE submits annual NESHAP reports to EPA that document radiological releases from the site.

- The ***Regional Water Quality Control Board (Los Angeles Region)*** is the lead agency responsible for regulating surface water discharge activities at the SSFL. Under the authority of the Clean Water Act, 33 U.S.C. 1251 *et seq*., and the National Pollutant Discharge Elimination System (NPDES), the board sets maximum limits for chemical contaminants in waters being discharged from the SSFL. These limits, along with requirements for sampling, are incorporated into the site's NPDES permit, which must be renewed every 5 years. The board also shares responsibilities with the California Department of Toxic Substances Control for monitoring discharges to the groundwater.

- The ***Ventura County Environmental Health Division*** is responsible for enforcing regulations on hazardous waste generation and storage, pursuant to an agreement with the State of California.

- The ***Ventura County Air Pollution Control District*** is the lead agency responsible for regulating nonradioactive air emissions at the SSFL. The district is responsible for establishing and enforcing local air pollution regulations that meet or exceed requirements of the federal and California State Clean Air Acts and the California Health and Safety Code. The district also issues permits that establish requirements for construction, modification, and operation of equipment and processes that may result in air emissions. The SSFL currently has five permits covering various process equipment and groundwater treatment facilities. Other responsibilities of the district include regulating asbestos removal projects, implementing the vehicle trip reduction program, and overseeing the state-mandated Air Toxics "Hot Spot" Program that requires facilities to inventory all toxic materials that could result in airborne releases.

2.3 FACILITY DESCRIPTIONS

At its mission peak, ETEC consisted of over 200 facilities. As ETEC was a test site, facilities were often remediated as necessary and demolished once their mission was achieved. Since the decision to close ETEC in 1996, many facilities have been decontaminated, decommissioned, and demolished. These activities were conducted under categorical exclusions pursuant to DOE's NEPA regulations (10 CFR Part 1021, Appendix B to Subpart D). Approximately 64 structures remain.

Three radiological facilities (comprising a total of 13 buildings) and one sodium facility are the principal focus of this EA. In addition, 50 other DOE support facilities (for example, office and storage buildings, warehouses, parking lots, electrical substations) are proposed for demolition. Figure 2-1 shows the locations of these facilities within ETEC. This section describes these facilities.

2.3.1 Radiological Facilities

The three radiological facilities remaining at ETEC are the RMHF complex, Building 4059, and Building 4024. In addition, two other former radiological ETEC facilities have already been decontaminated and released for unrestricted use by DOE, with the concurrence of the DHS. These cleanup activities met requirements for categorical exclusion from NEPA. One other facility has been decontaminated and is pending release by DOE. Because these facilities are no longer contaminated but have not been demolished, they are included in the discussion of other DOE support facilities (*see* Section 2.3.3).

2.3.1.1 Radioactive Materials Handling Facility Complex

The RMHF complex consists of nine different buildings that are used for the following purposes: decontamination and packaging (Building 4021); operations and storage vaults (Building 4022); offices (Building 4034); health physics services (Building 4044); enclosed storage (Buildings 4075, 4621, and 4665); covered storage (Building 4688); and security (Building 4658). A rainwater runoff catch basin (referred to as Building 4614) is also included within the approximately 12,000-square-meter (3-acre) RMHF. The RMHF has been in continuous operation as a storage and handling facility for radioactive materials and waste since the late 1950s. It is a RCRA-permitted facility. Operations at the RMHF include waste characterization, limited treatment, packaging, and temporary storage of radioactive and mixed waste materials, which are shipped offsite to appropriate approved disposal facilities. The facility is radiologically contaminated from past operations, including the storage of both new fuel and irradiated fuel.

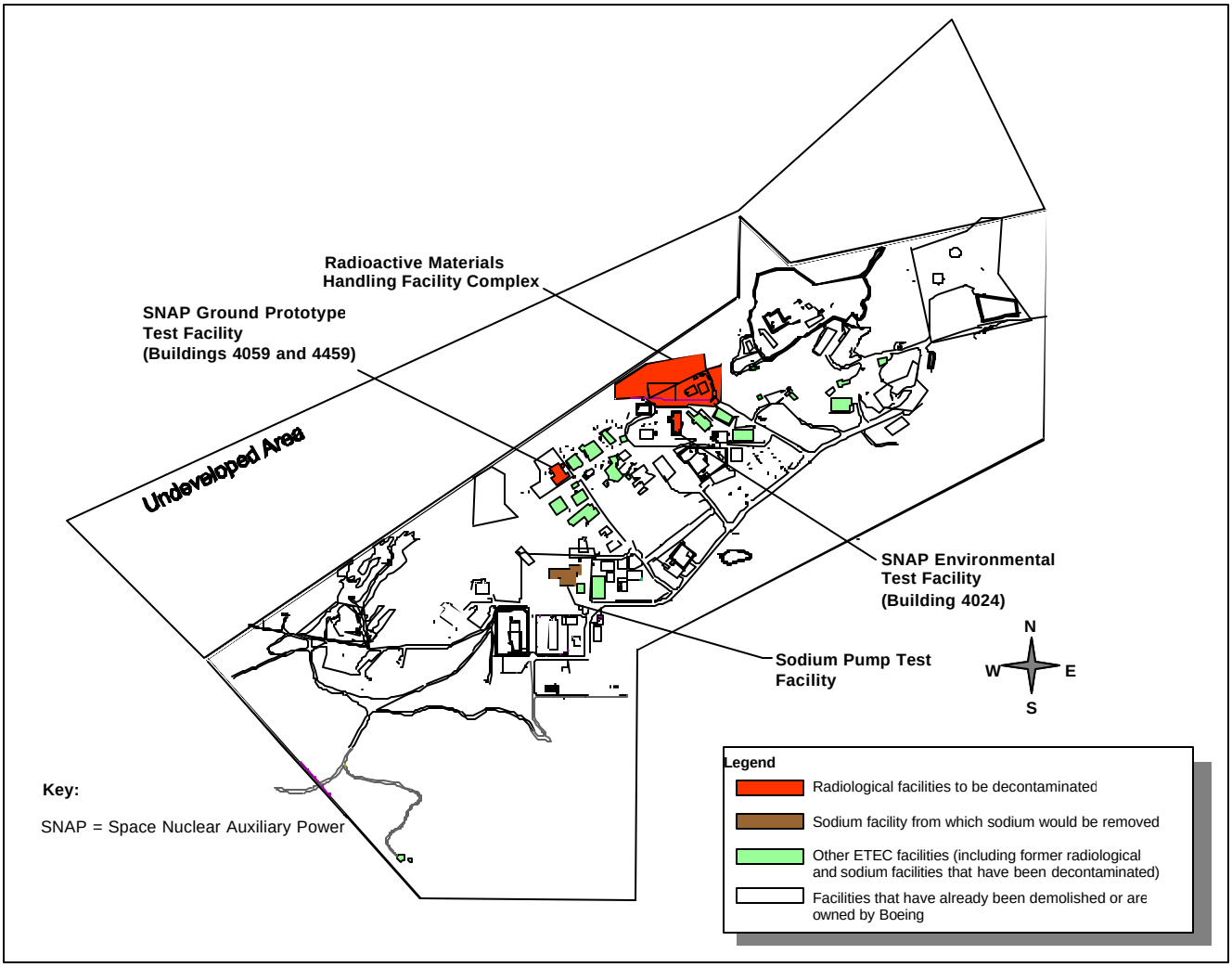

Figure 2-1. ETEC Radiological, Sodium, and Other Uncontaminated or Decontaminated Facilities

Radioactive Waste Types at ETEC

Activities at ETEC have resulted in the generation of three types of radioactive waste: low-level radioactive waste (LLW), mixed low-level waste (MLLW), and transuranic (TRU) waste. *The primary radionuclide of concern in soils is cesium^{137}.*

LLW includes all radioactive waste that is not classified as high-level radioactive waste, spent nuclear fuel, TRU waste, uranium and thorium mill tailings, or waste processed from ore. Most LLW consists of relatively large amounts of waste materials contaminated with small amounts of radionuclides, such as contaminated equipment, protective clothing, paper, rags, packing material, and soil. Most LLW contains short-lived radionuclides and generally can be handled without additional shielding or remote handling equipment.

MLLW is LLW that also contains hazardous components regulated under RCRA. MLLW results from a variety of activities, including the processing of nuclear materials used in energy research and development.

TRU waste is waste that contains alpha particle-emitting radionuclides with atomic numbers greater than uranium (92) and half-lives greater than 20 years in concentrations greater than 100 nanocuries per gram of waste. Some TRU waste also contains hazardous components regulated under RCRA, making it a mixed waste. In accordance with earlier DOE decisions, TRU waste will be disposed of at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. All TRU waste generated at

The RMHF is in active use. Operated safely since its initial use, the RMHF was designed and constructed to withstand naturally occurring hazards, including wind, earthquakes, landslides, and rainwater flooding. Adequate systems and controls are in place to minimize direct radiation exposure to personnel and the release of radioactive material into the environment. All potential hazards have been identified and engineering controls have been incorporated into the operation of the facility to ensure that safe operation is maintained at all times. Design safety features include security and radiation controls, evacuation routes, shielding provisions, ventilation and filtration, site water runoff control, alarm instrumentation, and fire protection. Ventilation from work areas in the RMHF is exhausted through high efficiency particulate air filters and released from a stack. Emissions from this exhaust stack are monitored and reported.

2.3.1.2 Building 4059

Building 4059, the Systems for Nuclear Auxiliary Power Ground Prototype Test Facility, was built in 1962-1963 for development testing of space nuclear auxiliary power reactors. It has one reactor vault in the basement (another vault in the basement did not house a reactor). Testing of the reactor was conducted in 1968-1969. The reactor vault was made radioactive by neutron activation during the reactor tests. At the end of the test operations, the reactor core and control system were removed, sent to an onsite examination facility for inspection, and then shipped offsite for disposal. To make a portion of the facility available for other use, decontamination was conducted according to DOE order 5400.5 surface contamination requirements (leaving a residual dose of less than one millirem per year). In 1999, the above-grade portion of the building and the underground, nonactivated portions of the basement were decontaminated and surveyed for release for unrestricted use. Building 4459 (a storage building) is within the fence line boundary of Building 4059.

2.3.1.3 Building 4024

Building 4024, the Systems for Nuclear Auxiliary Power Environmental Test Facility, contained two reactors, which were operated in two different vaults. Criticality tests were also conducted in this facility. As in Building 4059, the reactor vaults were made radioactive by neutron activation during the reactor tests. The reactors and associated equipment have all been removed and disposed of as radioactive waste. Some activated concrete shielding and reinforcing steel rods remain in the vaults.

2.3.2 Sodium Pump Test Facility (Building 4462)

The Sodium Pump Test Facility (SPTF) has two circulating sodium loops with transient capability and was used to test large sodium pumps, valves, and flow meters. It currently contains approximately 197,000 liters (52,000 gallons) of liquid sodium.[3] The residual sodium will be recycled.

Sodium

Metallic sodium is an excellent heat transfer medium and, for that reason, has been used as a coolant in nuclear reactors. It is not radioactive. Sodium does react vigorously with water, steam, oxygen, carbon dioxide, and several other common substances. The initial and secondary reactions may be violent. Sodium can burn spontaneously in air, releasing caustic fumes.

Activities at the SPTF have been classified as low-hazard because they present minor onsite and negligible offsite impacts to people or the environment. The facility was designed in accordance with applicable codes, and the Rocketdyne system of procedures applies to activities undertaken in the facility. These procedures include environment, safety, and health procedures, which ensure compliance with applicable federal, state, and local rules and regulations. Training of personnel and performance of operations in accordance with the procedures reduce the potential for accidents during operations.

Other sodium facilities at ETEC included the Liquid Metal Development Loops, Sodium Components Test Laboratory, Sodium Component Test Installation Complex, and Former Sodium Disposal Facility. The sodium has been removed from all of these facilities, and they have either been demolished or are proposed for demolition. Because they no longer contain any sodium, the former sodium facilities that have not been demolished but that are proposed for demolition are included in the discussion of other DOE support facilities (*see* Section 2.3.3).

2.3.3 Other DOE Support Facilities

Other facilities were constructed at ETEC to support DOE programs there. The structures include:

- Office buildings
- Electrical substations
- Storage buildings
- Emergency generator shelters

[3] At the time the analysis was originally conducted, the SPTF contained 197,000 liters (52,000 gallons) of liquid sodium. DOE, through its onsite contractor, has since removed all but 4,550 liters (1,200 gallons) as part of its ongoing cleanup activities at the site. Removal of the remaining volume of sodium would require 4 shipments, rather than the 11 shipments analyzed. Because the volume of sodium to be removed and the number of shipments required are substantially less than were analyzed, the environmental impacts that could occur as a result of removing and transporting this material would be correspondingly less than those noted in this document (see Sections 4.5 and 4.11). In addition, this document analyzes the removal and transportation of solid sodium, a chemical that is highly reactive with water. The remaining 4,550 liters (1,200 gallons) of sodium would be converted into liquid sodium hydroxide (lye), which is far less hazardous than solid sodium.

- Time card buildings
- Fuel oil storage tanks and piping systems
- Foundations
- Vaults and berms
- Former sodium facilities from which all sodium has been removed

Most of these facilities were not in radiological areas and have been demolished. Currently, approximately 50 uncontaminated support facilities are still present at the ETEC site (Table 2-1).[4] These facilities include the sodium facilities from which the sodium has already been removed and two former radiological facilities that have been released by DOE (with the concurrence of the DHS) but not yet demolished. Although these facilities do not contain radiological contamination or sodium, some do contain hazardous materials that are typical of those found in comparable commercial or industrial facilities, such as asbestos and lead-based paint.

Two of the support facilities (Buildings 4133 and 4029) make up the Hazardous Waste Management Facility (HWMF). These buildings were used for more than 20 years to convert waste metallic sodium into sodium hydroxide. Treatment and storage of waste sodium was authorized under a RCRA permit. Operations ended at the HWMF in 1998, and the facility is now in the process of closure.

Building 4029 was also used as a radiation instrument calibration facility from 1959 to 1974. In 1964, a below-grade storage tube became contaminated when a radium source was dropped into the tube. All radioactive sources were removed in 1974 and a radiation survey was performed that showed that the building was free of radiological contamination except for the interior of the radium storage well. The storage tube was removed in 1988. The building was used from 1974 to 1998 to store waste metallic sodium before treatment at Building 4133. Radioactive wastes were not treated at the HWMF.

Rocketdyne performed a radiological survey of Building 4029 in 1990 (Rocketdyne 1990). ORISE surveyed Building 4029 in 1992 (ORISE 1993), and the DHS Radiologic Health Branch surveyed the building in 1994 (DHS 1995). The building was released for unrestricted use in 1997. In 2000, EPA Region 9 performed an additional facility survey. The EPA radiological survey report has not yet been published.

The HWMF, including Building 4029, is now considered a sodium-related building relative to the closure of ETEC. The California Department of Toxic Substances Control is the lead agency for the HWMF closure. In accordance with an approved closure plan, the buildings will be demolished and a subsurface investigation initiated. Remediation will be performed as needed.

[4] Seven of the 50 support facilities were sodium facilities (Buildings 4354, 4355, 4356, 4357, 4358, 4756, and 4805) and, since the analysis was originally conducted, have been demolished as part of the ongoing cleanup activities at the site. Thus, there are now 43 support facilities that would be demolished. Because the volume of building debris is somewhat less than the volume originally analyzed, the environmental impacts that could occur as a result of transporting the debris material would be somewhat less than is noted in this document (see Section 4.11).

Table 2-1. Other Support Facilities at ETEC

Building	Building Name/Description
4012	X-Ray Facility / Storage
4013	Seismic Test Facility
4014	Storage Facility
4019	Equipment Storage and Computer Center
4027	Former Weld Shop
4029	Sodium/Hazardous Waste Storage
4032	Liquid Metal Development Loops 1 Lab
4038	ETEC Headquarters/Office Building.
4039	Office Building
4042	Liquid Metal Fast Breeder Reactor Development Testing
4057	Liquid Metal Development Loops 2 Lab
4133	Hazardous Waste Treatment Facility
4228	Power Pak
4334	Kalina Control Room
4335	Kalina Turbine Generator Bldg
4354	Control Element Test Structure
4355	Sodium Components Test Installation Complex Control Center/Offices
4356	Sodium Component Test Installation
4357	Sodium Component Test Installation Storage
4358	Sodium Component Test Installation Support Building
4457	(Foundation and Pit only)
4459	ETEC Storage
4461	SPTF Motor Generator Building
4463	Component Handling and Cleaning Facility
4473	Hydraulic Test Facility
4573	Parking Lot
4626	Warehouse
4641	Warehouse
4663	(Foundation only)
4683	Electrical Substation for Building 4143
4487	Office Building
4710	Sodium Component Test Installation Power Pak Cooling Tower
4713	Electrical Substation for Buildings 4012 & 4013
4719	Electrical Substation for Building 4019
4725	Electrical Substation for Buildings 4024 & 4025
4727	Electrical Substation for Buildings 4027, 4032, 4036
4742	Electrical Substation for Buildings 4023 & 4042
4756	Electrical Substation for Building 4355
4757	Electrical Substation for Buildings 4038 & 4057
4759	Electrical Substation for Building 4059
4760	Electrical Substation for Building 4462
4763	Electrical Substation near Building 4487
4780	Electrical Substation for Building 4463
4805	Timeclock Shack by Sodium Component Test Installation Building 4026
4863	Hydraulic Test Facility
4883	Electrical Substation at Building 4726 Substation
	Electrical Substation for Buildings 4030 and 4041
	Electrical Substation for Building 4228 Power In
	Electrical Substation for Building 4228 Power Out
	Electrical Substation near Building 4015

2.4 WASTE MANAGEMENT ACTIVITIES

Radioactive Waste Transportation Analysis

Additional volumes of LLW would be generated as a result of Alternatives 1 and 2; very small amounts of MLLW could also be generated. The shipment of LLW from ETEC to Nevada Test Site or Hanford Site was addressed in DOE's earlier LLW EA. The shipment of MLLW from ETEC to either of these sites was addressed in DOE's Waste Management Programmatic Environmental Impact Statement (DOE 1997a). The results of these analyses are incorporated by reference and the potential impacts of offsite transportation of LLW and MLLW will not be addressed in this EA.

No TRU waste is expected to be generated under any of the alternatives. The shipment of TRU waste to WIPP was analyzed in the WIPP SEIS-II (DOE 1997b) and the results of that analysis are incorporated by reference.

Small amounts of LLW continue to be generated each year at ETEC as a result of ongoing site closure activities (approximately 50 cubic meters [1,765 cubic feet] in fiscal year 2001). MLLW is not routinely generated (5 cubic meters [176 cubic feet] of MLLW were generated in fiscal year 2001). TRU waste is no longer generated at the ETEC site.

Currently, DOE sends LLW generated at ETEC to DOE disposal sites (the Nevada Test Site near Las Vegas, Nevada, and the Hanford Site in Richland, Washington), or Envirocare, a permitted commercial radioactive disposal facility in Clive, Utah, for disposal in accordance with an earlier DOE decision made pursuant to the *Environmental Assessment of Off-Site Transportation of Low-Level Waste from Four California Sites* (LLW EA) (DOE 1997c) and associated finding of no significant impact. DOE sends most MLLW generated at ETEC to Envirocare.

In 2002, DOE sent all ETEC TRU waste (approximately 11 cubic meters [388 cubic feet]) to Hanford for storage (prior to shipment, the waste was reduced in volume such that approximately 9 cubic meters was shipped to Hanford). The ETEC TRU waste will eventually be shipped from Hanford to the WIPP near Carlsbad, New Mexico for disposal, in accordance with an earlier DOE Record of Decision (63 Fed. Reg. 3624 (1998)) (DOE 1998a) made pursuant to the *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* (WIPP SEIS-II) (DOE 1997b).

Small amounts of hazardous waste are generated (1 cubic meter [35 cubic feet] in fiscal year 2001) and disposed of in commercial, licensed hazardous waste disposal facilities in accordance with RCRA and an earlier DOE Record of Decision (63 Fed. Reg. 41810 (1998)) (DOE 1998b) made pursuant to the *Waste Management Programmatic Environmental Impact Statement* (DOE 1997a). Nonhazardous debris waste is also generated at ETEC (50 cubic meters [1,766 cubic feet] in fiscal year 2001). This type of debris includes asphalt, concrete, and building materials. Debris waste is disposed of at a local municipal landfill.

In July 2000, the Secretary of Energy suspended the unrestricted release for recycling of all metals from radiological areas within DOE facilities. This suspension remains in effect pending the outcome of an environmental impact statement on the unrestricted release of such materials from DOE sites. A notice of intent to prepare an environmental impact statement on DOE policy alternatives for the disposition of radioactively contaminated scrap metals was issued on July 12, 2001 (66 Fed. Reg. 36562 (2001)).

2.5 CURRENT STATUS OF THE SITE

The current status of ETEC is described fully in the *Site Environmental Report for Calendar Year 2000* (DOE 2001b). In general, ongoing environmental monitoring at the site demonstrates that the SSFL does not impose any significant radiological impact on the health and safety of the general public. All significant potential pathways are monitored, including airborne, direct exposure, groundwater, surface

water, waste disposal, and recycling pathways. This monitoring confirms that there has been no offsite migration of chemical or radiological contamination. Results of these monitoring activities are contained in Chapter 4 of this EA and in the 2000 Site Environmental Report. The 2001 Site Environmental Report was published in September 2002 and mirrors the conclusions of the 2000 Site Environmental Report.

Currently, the risk level at the site is far below the 15-millirem per year standard, and in fact has been calculated to be 2×10^{-6} (0.09 millirem per year) for residential use. This risk assessment is based on a 1995 survey and soil sampling of previously remediated and unaffected areas of the site and was derived by taking the weighted average concentrations detected (2.4 picocuries per gram of cesium-137) and assuming that this concentration was uniform through out the site. Implementation of the ALARA process ensures that the actual cleanup is substantially below the 15-millirem per year standard. This was demonstrated by post-remedial sampling from the Former Sodium Disposal Facility and Former Hot Lab Facility where the final risk level was 0.014 millirem per year and 0.24 millirem per year, respectively.

Since 1988, DOE-funded activities have focused on decontamination and decommissioning of the ETEC facilities and offsite disposal of waste. Three facilities still contain residual radiological contamination and/or activation. Only one sodium facility remains.

The SSFL became subject to the RCRA corrective action process in 1989. EPA prepared the preliminary assessment report and conducted the visual site inspection portions of the RCRA facility assessment. The California Department of Toxic Substances Control has RCRA authorization and has become the lead agency in implementing the corrective action process for the SSFL. Currently, the SSFL RCRA corrective action program is at the RCRA Facility Investigation stage.

Soil contamination. Remediation of hazardous chemical contamination in soil at Area IV will be undertaken in accordance with RCRA. Based on an approved corrective measures study, which follows the completion of the RCRA Facility Investigation, Rocketdyne will prepare a corrective measures implementation plan that details the remediation requirements that will be necessary to address the hazardous chemical contamination in Area IV soil.

Groundwater contamination. An extensive groundwater remediation program is ongoing at the SSFL, including Area IV and ETEC. The major groundwater contaminant in Area IV is trichloroethylene (TCE). Interim measures have been implemented to pump and treat areas of known groundwater contamination. In Area IV, contaminated groundwater is pumped from a series of wells and treated using a granulated activated charcoal filtration system. Groundwater is monitored, sampled, and analyzed regularly. While the pump-and-treat activities are being performed on an interim basis, it is expected that this type of activity may continue under the RCRA corrective measures implementation plan.

Surface water contamination. Surface water is discharged regularly under a NPDES permit administered by the Regional Water Quality Control Board. The only contaminant of concern previously detected in surface water is mercury in sediment that can be mobilized during high flow. Small weirs and settling ponds are in place to prevent the transport of mercury offsite. Surface water and institutional controls to restrict access to contamination at levels of concern will remain in place until monitoring indicates that additional releases of mercury at levels greater than the NPDES permit limit are no longer possible.

All remediation of soil, groundwater, and surface water chemical contamination will be performed pursuant to the RCRA process under the jurisdiction of the California Department of Toxic Substances Control. Those activities are not the subject of this EA.